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7-18-02
PATENT APPLICATION



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

the Reissue Application of

Osamu TANITSU et al.

Group Art Unit: 2851

Application No.: 09/326,214

Examiner: A. Mathews

Filed: June 3, 1999

Docket No.: 103512.99

For: ILLUMINATION OPTICAL APPARATUS AND SCANNING EXPOSURE
APPARATUS

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REQUEST FOR RECONSIDERATION

Director of the U.S. Patent and Trademark Office
Washington, D.C. 20231

Sir:

In response to the Office Action dated January 3, 2002, the shortened statutory period for reply having been extended by the attached Petition for Extension of Time, Applicants request reconsideration of this application. Claims 1-104 are pending.

I. December 21, 2001 Information Disclosure Statement

An Information Disclosure Statement was filed on December 21, 2001. The Examiner is requested to consider the information included with that Information Disclosure Statement, and to return an initialed PTO-1449 with the next Patent Office communication.

II. Surrender of Original Letters Patent

Applicants are prepared to surrender the original Letters Patent once this application is deemed to be in condition for allowance. The Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below once the Examiner agrees that this application is in condition for allowance, and then Applicants' undersigned attorney can surrender the original Letters Patent.

III. All Claims are in Condition for Allowance

Applicants note with appreciation the allowance of claims 1-42 and 84-104.

Applicants also note with appreciation the indication of allowable subject matter in claims 49-53, 58-63 and 69-75. Applicants respectfully submit that all pending claims are in condition for allowance for at least the reasons set forth below.

Claims 43-48, 54-57, 64-68 and 76-83 stand rejected under 35 U.S.C. §103(a) over U.S. Patent No. 5,335,044 to Shiraishi in view of U.S. Patent No. 5,194,893 to Nishi, and vice versa. These rejections are respectfully traversed.

A. Claims 43-48, 76 and 77

Neither Shiraishi nor Nishi discloses or suggests an internal reflection type integrator having an exit plane with a shape substantially equal to that of a rectangular area that is illuminated by the illumination optical system as recited in independent claims 43, 76 and 77. While Shiraishi discloses that each lens element 7a of a fly-eye lens 7 has a shape similar to that of an effective area PA, which corresponds to the shape of the reticle, Shiraishi does not disclose or suggest (i) an internal reflection type integrator or (ii) making the shape of the exit plane of an internal reflection type integrator substantially equal to the shape of a rectangular area illuminated by the illumination beam. While Nishi discloses a fly-eye lens 7 in a scanning exposure apparatus, Nishi does not disclose or suggest any relationship between the fly-eye lens or the elements making up the fly-eye lens and the area illuminated by the illumination beam. As noted above, neither reference discloses an internal reflection type integrator.

Accordingly, independent claim 43 and its dependent claims 44-48, as well as independent claims 76 and 77, are patentable over Shiraishi and Nishi.

B. Claims 54-57 and 78-80

Neither Shiraishi nor Nishi discloses or suggests making the cross-sectional shape of the optical elements of a fly-eye type integrator substantially equal to the shape of a slit area that is illuminated by the illumination optical system as recited in independent claims 54, 78 and 80. As noted above, Nishi does not disclose or suggest any relationship between the elements forming the fly-eye lens 7 and the slit-shaped illumination area. Shiraishi only discloses that each lens element 7a of the fly-eye lens 7 has a shape similar to the shape of the reticle, i.e., a rectangular shape of the effective illumination area PA. Shiraishi does not disclose or suggest a slit illumination area or any relationship between the shape of a slit illumination area and the shape of the elements making up a fly-eye type integrator. Shiraishi teaches that the shape of the lens elements making up the fly-eye type integrator are related to the shape of the reticle, rather than the shape of a slit illumination area used for scanning exposure.

Accordingly, independent claims 54, 78 and 80, as well as dependent claims 55-57 and 79, are patentable over Shiraishi and Nishi.

C. Claims 64-68 and 81-83

Neither Shiraishi nor Nishi discloses or suggests any relationship between a slit illumination area and a plurality of light source images formed by an optical integrator as recited in independent claims 64, 81 and 83. Figs. 16A and 16B of Shiraishi illustrate a fly-eye lens 7 made from a 6-by-8 matrix of lens elements 7a. As noted above, each lens element 7a of the Shiraishi fly-eye lens 7 has a shape similar to that of the reticle. However, as noted above, Shiraishi does not disclose or suggest any relationship between the shape of a slit illumination area and a plurality of light source images formed by an optical integrator. Nishi also does not disclose any relationship between the fly-eye lens and the slit area.

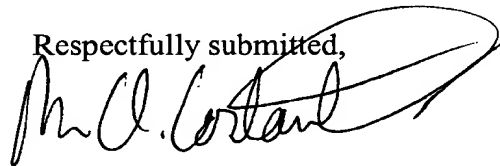
Accordingly, Applicants respectfully submit that independent claims 64, 81 and 83, as well as dependent claims 65-68 and 82, are patentable over Shiraishi and Nishi.

IV. Conclusion

In view of the foregoing, Applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance earnestly solicited.

Should the Examiner believe anything further would be desirable to place this application in even better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,



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Registration No. 33,565

MAC/ccs

Attachment:

Petition for Extension of Time

Date: July 3, 2002

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